



US Army Corps
of Engineers
North Central Division

GREAT LAKES LEVELS

Update Letter No. 70 3 May 1991

RECREATIONAL BOATING AND WATER SPORT

The Great Lakes-St. Lawrence River region is North America's renowned year-round sports and recreation wonderland. Those who visit or live in the region enjoy all that nature can provide, from the ice and snow of the winter to the sun and water of summer. In the transition between these seasons, there is the magical period known as spring, when nature turns back her mantle of white and paints the landscape in a multitude of colors. It is at this time of the year that the urge hits us to launch our boats or to plan our summer vacations (Figures 1-3). It is specifically to these people that we have dedicated this article in hopes of making their leisure time activities safer and more enjoyable. As such, we are providing the following information.

Coast Pilots, Navigation and Fishing Charts

The National Ocean Service (NOS), a branch of the National Oceanic and Atmospheric Administration (NOAA), publishes, among other things, the following list of navigational charts for the Great Lakes and other U.S. waters.

Coast Pilots: A series of books are available that cover a wide variety of information important to navigators of the United States coastal, intracoastal, and Great Lakes waters. Subjects include navigation regulations, outstanding landmarks, channel and anchorage peculiarities,

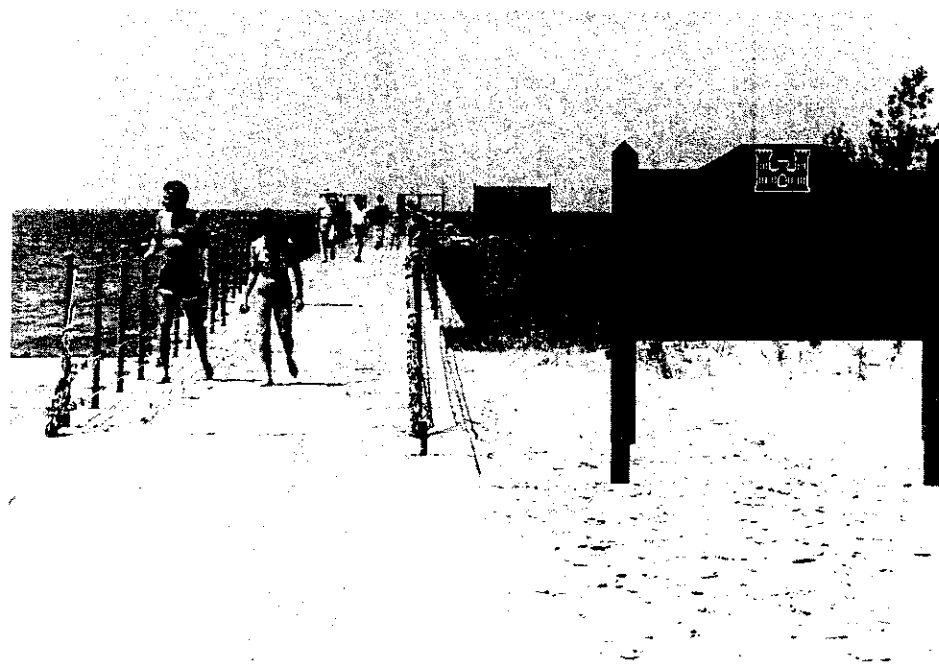


Figure 1. Recreational area of Muskegon Harbor, U.S. Army Corps of Engineers.

dangers, weather, ice freshets, routes, pilotages, and port facilities. Coast Pilot 6 covers all the Great Lakes and the St. Lawrence River.

Charts: a. Small-craft folded charts. These specially designed charts are published with small craft information for certain harbors and are folded into convenient panels.

b. Small-craft book charts. A series of large scale charts, published in book form, for certain harbors and confined localities of the Great Lakes.

c. Canoe charts. A series of charts of the Minnesota-Ontario Border Lakes designed to suit the needs of small, shallow-draft vessels.

d. Conventional Charts, consisting of four scale groups.

(1) Harbor charts (scale 1:50,000 and larger) are intended for navigation and anchorage in harbors and small waterways.

(2) Coast charts (scales from 1:50,000 to 1:150,000) are for use in navigation inside the reefs and shoals, entering bays and harbors of considerable size, and for navigating certain inland waterways.

(3) General charts (scales from 1:150,000 to 1:600,000) are used when a vessel is well offshore, but when its position can be fixed by landmarks, lights, buoys, and characteristic soundings.

(4) Sailing charts (scales smaller than 1:600,000) are plotting charts used for offshore sailing between distant coastal ports and for approaching the coast from the open water.

To determine what is available for the Great Lakes, you can order, free of charge, Catalog 4, "Great Lakes and Adjacent Waterways," from the following address:

Distribution Branch, N/CG33
National Ocean Service
6501 Lafayette Avenue
Riverdale, MD 20737-1199
Phone: (301) 436-6990

Also, available from this source is "Catalog 5, Bathymetric Mapping Products".

This is a guide to the following types of maps:

(1) Bathymetric Maps-
Topographic Maps of the sea floor.

(2) Topo/Bathy Maps. These detailed multipurpose maps show both the NOS bathymetry (ocean bottom topography) and the U.S. Geological Survey (U.S.G.S.) land topography.

(3) Bathy Fishing Maps. Topographic maps of the sea floor designed primarily for use by commercial and sport fishermen. These are intended to aid fishermen and other users to identify seafloor features and the location of potential fishing grounds.

(4) Plotting Sheets.

(5) Geophysical Maps.

(6) Regional Maps.

Shipwrecks

A file which may be of interest to scuba divers is "Wreck Information." The Automated Wreck and Obstruction Information System (AWOIS) is a file containing written information on



Figure 2. Recreational Boating Marina.

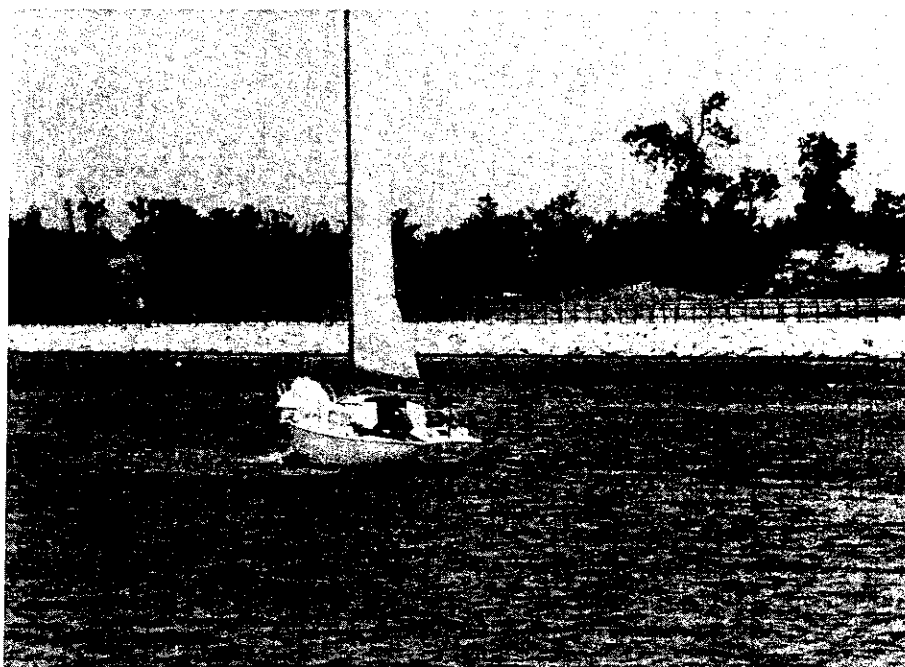


Figure 3. Water Sport Activities.

Table 1
Great Lakes Hydrology

PRECIPITATION								
BASIN	APRIL				YEAR-TO-DATE			
	1991*	AVERAGE**	DIFF.	% OF AVERAGE	1991*	AVERAGE**	DIFF.	% OF AVERAGE
Superior	2.4	2.0	0.4	120	7.7	7.0	0.7	110
Michigan-Huron	3.6	2.5	1.1	144	9.7	8.5	1.2	114
Erie	3.9	3.1	0.8	126	10.6	10.2	0.4	104
Ontario	4.4	2.8	1.6	157	12.7	10.5	2.2	121
Great Lakes	3.4	2.5	0.9	136	9.6	8.6	1.0	112

LAKE	APRIL WATER SUPPLIES		APRIL OUTFLOW ²	
	CFS ¹	AVERAGE ³	CFS ¹	AVERAGE ³
Superior	151,000	149,000	68,000	69,000
Michigan-Huron	390,000	286,000	181,000	182,000
Erie	80,000	66,000	226,000	203,000
Ontario	108,000	93,000	279,000	249,000

* Estimated (inches) ** 1900-89 Average (inches)

1 Cubic Feet Per Second 2 Does not include diversions 3 1900-89 Average (cfs)

For Great Lakes basin technical assistance or information, please contact one of the following Corps of Engineers District Offices:

For NY, PA, and OH:
Colonel John Morris
Cdr, Buffalo District
U.S. Army Corps
of Engineers
Buffalo, NY 14207-3199
(716) 876-5454, Ext. 2201

For IL and IN:
LTC Randall R. Inouye
Cdr, Chicago District
U.S. Army Corps
of Engineers
River City Bldg. (6th Flr)
111 N. Canal Street
Chicago, IL 60606
(312) 353-6400

For MI, MN, and WI:
Colonel Richard Kanda
Cdr, Detroit District
U.S. Army Corps of
Engineers
P.O. Box 1027
Detroit, MI 48231-1027
(313) 226-6440 or 6441

more than 3,600 wrecks and obstructions in U.S. waters. Requests for AWOIS information and document copies should be addressed to the following:

Operations Section, N/CG241
National Ocean Service
NOAA
Rockville, MD 20852

Recreational Boat Statistics

Based on the 1989 statistics compiled by the U.S. Coast Guard, the following is a statewide distribution of registered recreational boats in the Great Lakes area:

Minnesota.....706,085
Wisconsin.....482,326
Michigan.....856,749
Illinois.....339,979
Indiana.....218,228
Ohio.....380,412
Pennsylvania...279,159
New York.....419,956

The safety record according to the U.S. Coast Guard indicates 89 accidents in 1989.

Rules of the Waterway

A book entitled "Navigation Rules, International-Inland," contains the international regulations for prevention of collisions at sea. It also contains the Inland Navigation Rules which became effective in the Great Lakes on March 1, 1983. These "rules of the waterway" are the traffic rules all boaters should follow. You may purchase this publication from the U.S. Government Printing Office (GPO), at the GPO Bookstores located in many cities, from GPO sales agents located in principal ports, or order by telephone at (202) 783-3238. The book is also available by mail order from the following:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Harbor Guide

The Michigan Department of Natural Resources has published a booklet entitled "Michigan Harbors Guide, 1991." This publication shows aerial photographs of the harbors and lists the services which are available at each. There is no charge for this guide. To request a copy of this booklet, write to the following address:



Figure 4. Zebra Mussel Watch Card
(Courtesy of The Great Lakes Sea Grant Institute)

Michigan Department of Natural Resources
Recreational Division
Knapps Center/ Lower Level
300 South Washington Square
Lansing, MI 48933-4831

Boating Safety Courses and Hotlines

To ensure everyone's safety while on the water, the U.S. Coast Guard offers Boating Safety Courses which are generally free of charge, although in some cases, there may be a fee for the materials used. To find out when and where these courses will be offered (anywhere in the country), call the following toll-free number: 1-800-336-2628.

The Coast Guard also operates a Boating Safety Hotline to answer safety questions, such as "What type of fire extinguisher should I carry on my boat?", "How many people can my boat safely carry?" or "What are the rules on towing a skier?" The Boating Safety Hotline is 1-800-336-5647. Boating safety in U.S. navigable waters is a respon-

sibility of the Coast Guard and state and local authorities.

Recreational Brochures

The Corps of Engineers publishes Recreation brochures for the Great Lakes, as well as for nine other regions of the country. These brochures show the location of Corps of Engineers recreation projects, visitor centers and places of historical interest. They list, by state, the Corps' projects and recreation sites and the facilities available at these sites. They also give a brief description of each site, as well as directions on how to get there. The three brochures, listed below by region and brochure number, are free upon request by writing to the local Corps of Engineers District Offices listed at the end of this Update Letter. Other regions of the U.S. have similar Corps publications.

Mid-Atlantic States EP 1130-2-420

Great Lakes States EP 1130-2-422

Mississippi Basin EP 1130-2-423

The Detroit District Office also has informational brochures on the Soo Locks in Sault Ste. Marie, Michigan

and Duluth-Superior Harbor in Minnesota and Wisconsin.

Many of the publications discussed above provide additional information about other charts, maps, brochures, or booklets which are available to the public. Many marinas, boating clubs, and power squadrons also post notices of boaters' safety classes and information about other local events. They can also assist in helping you get the information you need. We here at the North Central Division, U.S. Army Corps of Engineers, wish everyone a safe and happy boating summer.

Zebra Mussel

Some years back, the Great Lakes were invaded by an uninvited species of fish known as *Alewives*. In recent years, a freshwater mollusk has also entered the Great Lakes. Known as the *Zebra Mussel*, it is thought to have been transported into the lakes in the ballast water of foreign freighters. These mussels are causing many hardships, including clogging municipal water intakes and clinging to ship hulls. It is this latter situation that is also allowing the *Zebra Mussel* to further spread throughout the lakes and their feeder rivers. The mussels can live up to five years and reproduce quite rapidly. Unfortunately, in the food cycle, the *Zebra* has few known enemies, with only sheepheads and certain species of diving ducks capable of eating the young. To help prevent further spread of the mussel there are some cautionary measures boaters can take. These include inspecting hulls of boats and removal of the *Zebra* before traversing into another water body. For additional information, wallet-size *Zebra Mussel* cards are available through the Great Lakes Sea Grant Network (Figure 4). The card features photos of the mollusk,

briefly describes its distinguishing traits, and tells you what to do if you find one. These cards are available from your state's Sea Grant Office, either individually or in bulk. The prices vary by Sea Grant office, ranging from free to about 10 cents for just one card. Bulk prices however, may be lower. To get these cards or other information about the *Zebra Mussel*, the addresses and telephone numbers of the Sea Grant offices are provided below.

Illinois/Indiana Sea Grant
Sea Grant Communicator
65 Mumford Hall
1301 West Gregory Drive
Urbana, IL 61801
Phone: (217) 333-9448

Michigan Sea Grant College
Program
2200 Bonisteel Boulevard
University of Michigan
Ann Arbor, MI 48109-2099
Phone: (313) 764-1138

Minnesota Sea Grant
1518 Cleveland Ave. North
Suite 302
St. Paul, MN 55108
Phone: (612) 625-1253

New York Sea Grant
Swetman Hall
SUNY College
Oswego, NY 13126-3599
Phone: (315) 341-3042

Ohio Sea Grant
1314 Kinnear Road
Columbus, OH 43212
Phone: (614) 292-8949

Sea Grant Communications
1800 University Avenue
Madison, WI 53705
Phone: (608) 263-3259

Great Lakes Basin Hydrology

The level conditions on the lakes are shown in graphical and tabular form in the Bulletin. This includes a plot of actual levels for the past 1-2 years; a forecast plot for the next 6 months; a table of the past month's actual levels; and period of record (1900-1990), maximum, minimum and average levels in both graphical and tabular form for comparison purposes.

The precipitation, water supplies, and outflows for the lakes are provided in Table 1. For the precipitation, this includes the actual for the past month and year-to-date, as well as a comparison to long-term average. The water supplies and outflows shown are the actuals for the past month and a comparison to the long-term average.

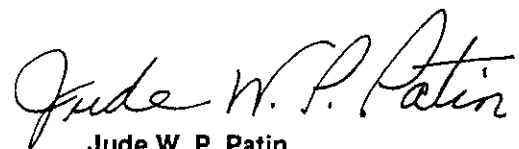
Board Meetings with Public

The International St. Lawrence River Board of Control will meet with the public on June 27, 1991, in Kingston, Ontario.

The International Niagara Board of Control will meet with the public on September 12, 1991, in Fort Erie, Ontario.

The International Lake Superior Board of Control will meet with the public on September 17, 1991, in Sault Ste. Marie, Ontario.

Further details will be provided in future updates.



Jude W. P. Patin
Brigadier General, U.S. Army
Commanding General and
Division Engineer